

# Digital Health Technologies Assessment Based on Patient-Reported Outcome Measures (PROMs): Virtual Reality (VR) in the Treatment of Specific Phobias

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## INTRODUCTION

**Specific phobias** are characterized by marked and excessive fear or anxiety, accompanied by avoidance behaviors.

**In vivo exposure therapy** is the **standard treatment**, but **imaginal exposure therapy** is also used. However, confronting the stimulus in real life or through imagination **presents limitations**.

**Virtual reality exposure therapy (VRET)** could help to **overcome** limitations of **traditional therapies** by offering a controlled, safe, and customizable exposure, improving accessibility.

## OBJECTIVES

- This study aimed to:
- **evaluate** the **efficacy** of **VR-based exposure therapy** compared to traditional methods (in vivo or imaginal) for treating specific phobias;
  - **identify** the standardized and validated Patient-Reported Outcome Measures (**PROMs**) used to assess the efficacy of VR-based treatments for specific phobias.

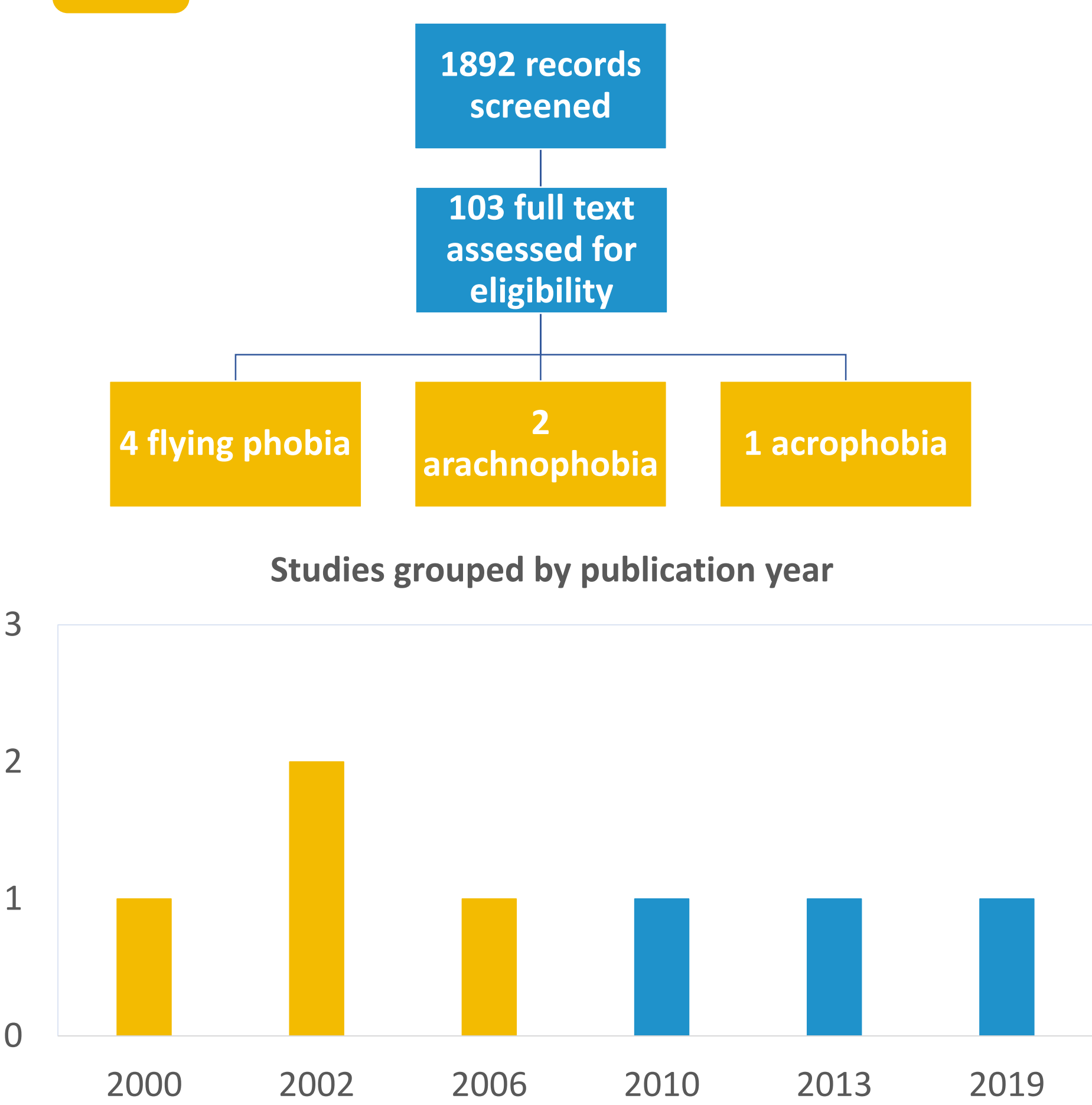
## METHOD

A systematic review was conducted following PRISMA guidelines and the following PICOD:

Population	Specific phobia patients
Intervention	VR exposure therapy
Comparison	<i>in vivo</i> or imaginal exposure therapy
Outcome	Patient-reported outcome for fear/anxiety
Design	RCT

A meta-analysis using **standardized mean differences** and a **random-effects model** was conducted to **compare** values of **scales** for specific phobia. **One** scale (the most frequently used) was selected **per study** for the comparison.

## RESULTS



**Seven studies** were identified. Among them, two published their follow-up in different publications.

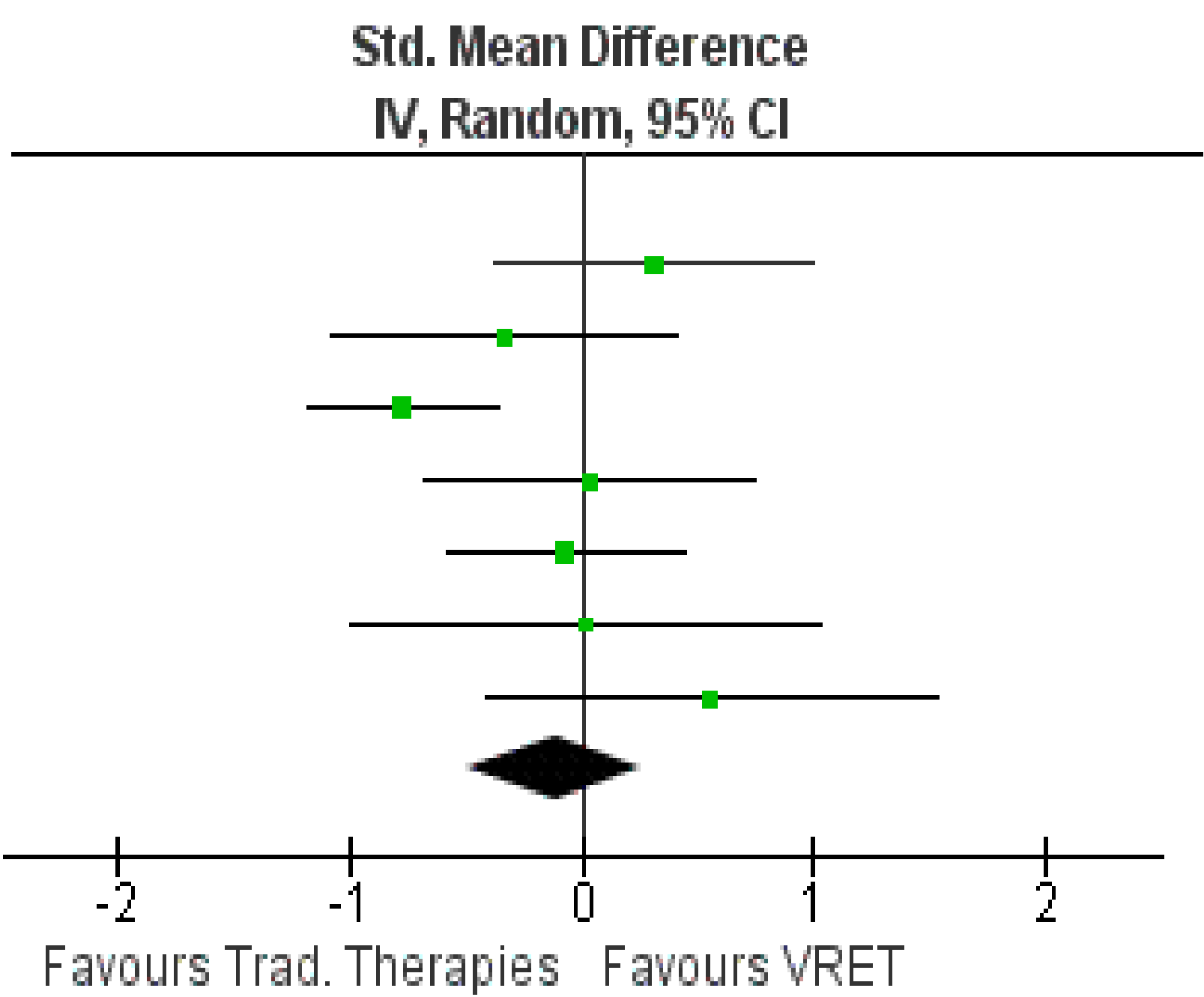
**Four studies** (yellow) were published between **2000** and **2006**, with the remaining studies published in 2010, 2013, and 2019.

Flying phobia scales	Arachnophobia scales	Acrophobia scales	General scales
<ul style="list-style-type: none"><li>• <b>FFQ</b></li><li>• FFS</li><li>• DEFAS</li><li>• <b>FFI</b></li><li>• QAF</li></ul>	<ul style="list-style-type: none"><li>• <b>FSQ</b></li><li>• SBQ</li><li>• SPQ</li></ul>	<ul style="list-style-type: none"><li>• <b>AQ</b></li><li>• ATHQ</li></ul>	<ul style="list-style-type: none"><li>• GAD-7</li><li>• SUDS</li><li>• STAI</li><li>• VR scenario sheet</li></ul>

Among the included studies, more than **ten self-reported scales** were used to assess fear/anxiety in **specific phobias**. In addition, **four non-specific** self-reported scales were also used to assess fear/anxiety.

Not all studies used the same scales to assess the specific phobia.

- Flying phobia:**
- three studies used **FFI**, **QAF**
  - one study used **FFQ**, **FS**, **DEFAS**
- Arachnophobia:**
- both studies used **FSQ**
  - one used **SBQ**, the other used **SPQ**



There are **no differences** between **traditional therapies** and **VRET** assessed up to two weeks from treatment (p=0.54).

Scales used for the meta-analysis are bold in the table.

Heterogeneity:  $I^2 = 53\%$

## CONCLUSIONS

- The body of **evidence** is **based** in **older publications**. Among the seven studies reviewed, four were published in or before 2006.
- Each phobia type was assessed using its own fear/anxiety questionnaires. In addition, **not all studies use the same instruments** to assess fear/anxiety in the specific phobia.
- Meta-analysis revealed **no statistically significant differences among treatments**. Virtual Reality Exposure Therapy (VRET) may be equivalent in efficacy to traditional exposure-based therapies. However, **methodological limitations** and **heterogeneity** were identified.
- More **studies** are **needed** to explore the potential advantages in terms of **accessibility**, **patient engagement**, and **cost-effectiveness**. Future research should aim to **standardize outcome measures** to improve methodological consistency to strengthen the evidence base.

## REFERENCES



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## CONTACT INFORMATION



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